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Before the  
Federal Communications Commission  
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of

Implementation of the Local Competition  
Provisions in the Telecommunications Act  
of 1996

Inter-Carrier Compensation for ISP-Bound  
Traffic

CC Docket No. 96-98

CC Docket No. 99-68

### COMMENTS OF GLOBAL NAPS, INC.

Global NAPs, Inc. ("Global NAPs") respectfully submits these Comments in response to the Notice of Proposed Rulemaking released in Docket No. 99-68.<sup>1</sup> Global NAPs, a competing local exchange carrier ("CLEC"), is a leading provider of dial-up connections to the Internet. Burgeoning consumer demand for Internet access, including dial-up access, will create continuing pressure on the local exchange industry to supply efficient and reliable dial-up connections for ISPs. If CLECs are to participate in meeting that demand, the relevant regulatory rules must provide a mechanism by which they are to be compensated for doing so — which is the objective of this NPRM.

Global NAPs concurs with the Commission that commercial negotiations, driven by market forces, are the best means of establishing the terms of interconnection contracts relating to calls from end users to Internet Service Providers ("ISPs"). It is critical, however, that the Commission establish a reasonable benchmark for the pricing of ISP-bound traffic if the negotiations that the Commission contemplates are not to devolve into endless regulatory and

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<sup>1</sup> In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Inter-Carrier Compensation for ISP-Bound Traffic, *Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68*, CC Docket Nos. 96-98 and 99-68 (released February 26, 1999). This document is referred to as the "*Declaratory Ruling*" when discussing what the Commission actually held, and as the "*NPRM*" when discussing the rulemaking proposal *per se*.

court litigation — as is occurring following the issuance of the *Declaratory Ruling*. For this reason, Global NAPs recommends that when a CLEC uses a standard Class 4 or Class 5 telephone switch to route ISP-bound traffic to the ISP, the most reasonable cost benchmark is the affected incumbent local exchange carrier's ("ILEC's") tariffed interstate switched access local switching rate element. Use of this benchmark comports well with the Commission's determination that ISP-bound traffic is jurisdictionally interstate and has traditionally been characterized as an interstate access service.<sup>2</sup>

**I. THE PUBLIC INTEREST WILL BE SERVED BY AFFORDABLE, WIDE-SPREAD ACCESS TO THE INTERNET.**

The number of consumers who access the Internet by means of dial-up connections to ISPs is growing exponentially. The public interest strongly favors unfettered Internet access for consumers. *See, e.g.*, 47 U.S.C. §§ 230(a), (b). To meet the growing demand for Internet dial-up access, ISPs need an ever-increasing number of telephone lines connected to the public switched network. The public interest in broad-based Internet access can only be fulfilled if the local exchange industry supplies ISPs with these telephone lines, and connects calls to the Internet via ISPs.<sup>3</sup>

The Commission has two choices for accomplishing this task: monopoly or competition. Either it can have ILECs carry and terminate all of the burgeoning ISP-bound traffic, or it can preserve regulatory rules that allow competition in meeting this demand to flourish. If competition is the preferred choice — as it must be under the terms of the Telecommunications Act of 1996 — then competitors have to have a meaningful economic opportunity to compete for the business. Simply stated, if competitors cannot be paid to complete ISP-bound calls, then they will not do so. Consequently, the challenge here is to establish rules that create an environment that will enable the broadest possible entry of new

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<sup>2</sup> *Declaratory Ruling* at ¶ 16.

<sup>3</sup> The discussion in this section of these Comments draws heavily on the attached Statement of Fred Goldstein.

competitors, on commercially reasonable terms in light of the activities undertaken and costs incurred by all affected parties.

CLECs play a vital role in preserving access to the Internet, and do so in a way that ILECs have historically been unable or unwilling to do. Over the last several years, CLECs have taken a large share of the market for circuits serving retail dial-up ISPs. While CLECs typically provide lower prices to the ISPs, their success in the marketplace actually reflects a different value proposition that is more compelling than price alone. This can be simply summarized: CLECs actually like doing business with ISPs, and treat them as valued customers. ILECs for the most part do business with ISPs only begrudgingly, and when they do, they attempt to fit them into ratepayer molds designed for an earlier era.<sup>4</sup>

The rapid growth of mass consumer interest in and access to the Internet has largely occurred since the passage of the 1996 Act, and the subsequent emergence of CLECs. A large share of the Internet's incremental dial-in growth has gone to CLECs, not ILECs. Thus, the ILEC networks are not now prepared to handle the additional traffic that the CLECs currently handle. For example, in 1996, several ILECs (notably Pacific Bell and Bell Atlantic) informally petitioned this Commission to have ISPs reclassified as IXCs; that is, to remove the "ESP exemption." This effort led to the Commission's "Notice of Inquiry" regarding the impact of Internet usage on the PSTN. The ILECs' position papers stressed the "harm" being caused by heavy ISP traffic *on their terminating local switches*.

Without any increase in revenue per line, increased network congestion stemming directly from Internet traffic has forced Bell Atlantic and NYNEX to invest substantial amounts in emergency network expansion. For example...that figure is expected to exceed \$300 million in 1997. These investments include installation of a large number of new line units and ISDN terminations in central office

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<sup>4</sup> Global NAPs, like many other CLECs, recognizes the inefficiencies in using the existing Public Switched Telephone Network ("PSTN") as a means of accessing the Internet. For this reason, Global NAPs supports the rapid development of xDSL, cable modems, high-bandwidth wireless local loops, and other technological developments to increase the network's functionalities, and develop a more data friendly network. The bottom line, however, is that for the immediate future, most Americans' access to the Internet will be via the PSTN.

switches to accommodate additional traffic volumes, and interoffice trunks to carry the traffic between offices...*In February 1997, NYNEX installed an additional \$6.2 million central office switch in the SoHo neighborhood of New York City just to handle Internet lines as a result of massive increases in ISP traffic in the area.*<sup>5</sup>

The threatened additional cost and stress on the ILECs' networks has not materialized. This is not because the ILECs adapted their networks to meet the specialized requirements of ISPs, however. To the contrary, it is because CLECs have accepted this task, allowing the ILECs to focus on the parts of the network which they handle best. An ILEC network is generally provisioned around longstanding assumptions of typical voice traffic patterns, which means that "line concentration" is a valid approach to cost control.<sup>6</sup> In contrast, CLECs who provide service to ISPs do not deploy their switches in this way. Instead, they configure their switches so that there will be non-blocking interconnection between ports.<sup>7</sup> These arrangements enable CLECs to efficiently handle the high concentrations of traffic received by ISPs, while the ILECs concentrate on the lower-average-traffic subscribers who originate most of the traffic. As a result, the CLECs, not the ILECs, have built up the high-traffic-concentration portion of the Public Switched Telephone Network ("PSTN") since 1996, providing the terminating capacity for *millions* of modems.

This CLEC capacity simply does not exist on the ILEC networks. Consequently, if the CLECs were to cease to handle these terminating calls, and the ISPs instead had to obtain their PSTN lines from ILEC switches, the results could be severe for certain ILEC switches —

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<sup>5</sup> Joint Comments of Bell Atlantic and NYNEX on *Notice of Inquiry*, CC Docket No. 96-262, March 24, 1997 at 6 (emphasis added.)

<sup>6</sup> The average residential line is in use less than a tenth of the time. As a result, in common AT&T Technologies (pre-Lucent vintage) 5ESS, the Analog Line Unit (ALU) supports 512 lines, but only 64 simultaneous connections, an 8:1 concentration ratio. On these switches, only the digital trunk ports are essentially non-blocking, but even these are somewhat constrained by the limit of 512 simultaneous connections per Switch Module (SM). A large switch typically has many SMs interconnected to each other, creating a potential blocking situation. Thus, central office switches assume that

<sup>7</sup> The most common CLEC switches are the Lucent 5ESS-2000, whose switch module, the SM-2000, supports over 10,000 simultaneous calls, and the Nortel DMS-500, which was designed for CLEC use and connects PRIs to a nonblocking core. Indeed, equipment vendors are actively deploying technologies that will allow CLECs to perform these functions even more efficiently.

if, in fact, the ILECs could actually connect ISPs to their networks in a timely fashion at all. In this regard, the doom-and-gloom scenarios painted by the ILECs in their 1996 submissions to this Commission were avoided *because much if not most of the additional ISP-bound traffic went to the CLECs*. Because CLECs provide better and more efficient service to ISPs, ISPs have tended to obtain their services from CLECs instead of ILECs. This marketplace phenomenon has saved the ILECs millions of dollars in cost that they would have had to incur in order to meet the ever-increasing demand for dial-up Internet access. It should be apparent that the CLEC industry is inextricably linked with the rapid expansion of dial-up connections to the Internet.

The purpose of terminating compensation for ISP-bound calls is to recognize that the functions that the ILEC no longer performs — reflected in the ILEC cost savings — are now performed by the CLEC. Without terminating compensation, the ILEC would save the costs of terminating calls to the CLEC's customers, but would still collect revenues from its own end users to deliver the end users' ISP-bound calls all the way to the ISP. Yet the CLEC would have no source of revenues to cover the costs of terminating calls to its end users, other than the end users themselves. This would force the CLEC to increase the charges to its end users, because these end user charges would have to cover the costs of both call origination and call termination as well. In such a scenario, the ILECs would off-load substantial costs to the CLECs, with ISPs (and, inevitably, their customers) paying more for access.<sup>8</sup> This would not serve the public interest in encouraging affordable access to the Internet or in encouraging competition in all segments of the telecommunications industry. Instead, it would simply be an indirect wealth transfer from consumers to ILECs.<sup>9</sup>

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<sup>8</sup> The discussion in this paragraph draws on the Affidavit of Lee L. Selwyn, attached hereto as Exhibit 2, especially ¶¶ 13-18.

<sup>9</sup> The ILECs would shed costs to the CLECs without either compensating CLECs for their efforts or reducing their charges to their end users. The ISPs would face higher costs which would be passed on to consumers. Consumers would, therefore, end up paying more for the same level of service they receive today, and the ILECs' bottom line would be improved by having shed the cost but kept the revenue. As an added "bonus," the "rate increase" that subscribers would perceive relating to dial-up access to the Internet would look as though it originated with their ISPs, when in fact it originated with the ILEC. The Commission should not sanction such sleight-of-hand at the expense of consumers.

For these reasons, some form of mandatory reciprocal compensation for ISP-bound calls is essential to realize Congress's goal to open up the local exchange market to meaningful competition.<sup>10</sup> If a CLEC was not entitled to compensation for calls the ILEC's end users make to the CLEC's end users, the CLEC would be forced to charge higher prices and would be unable to penetrate the market effectively, or, perhaps, at all.

## **II. THE WAY TO PROMOTE SWIFT, EFFICIENT COMMERCIAL NEGOTIATIONS IS TO ESTABLISH A BENCHMARK FOR INTER-CARRIER COMPENSATION.**

In order to promote commercial negotiations, the Commission should consider using an existing tariffed rate as a benchmark. This rate would apply in cases where the parties could not agree on a negotiated solution. It would serve the valuable function of providing a default figure for the parties to use in negotiation, and for state commissions to refer to in any subsequent arbitrations. This approach would promote competition because it would allow ILECs and CLECs to break the impasse of their disagreement about reciprocal compensation.<sup>11</sup>

Currently, ILECs have a simple objective in their interconnections negotiations with CLECs: to pay CLECs nothing for terminating traffic to ISPs. To make commercial negotiations a reality, the Commission needs to find a way to break this deadlock. Ultimately, this would serve the business interests of both ILECs (who will not need to build as many facilities, and add as many switches if CLECs carry and terminate much of the ISP-bound traffic) and CLECs (who can finally conclude their interconnection negotiations and make some money

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<sup>10</sup> The basic purpose of the Telecommunications Act of 1996 was to establish a "pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans *by opening up all telecommunications markets to competition.*" Joint Manager's Statement, S. Conf. Rep. 104-230, 104th Cong., 2d Sess.1 (1996) (emphasis added).

<sup>11</sup> In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers, *First Report and Order*, 11 FCC Rcd 15499 (1996) ("*Local Competition Order*") at ¶ 114 ("[I]ack of national rules could also provide opportunities for [ILECs] to inhibit or delay the interconnection efforts of new competitors, and create great uncertainty for the industry, capital markets, regulators, and courts as to what pricing policies would be pursued by each of the individual states, frustrating the potential entrants' ability to raise capital.")

serving ISPs.) Moreover, aiding the entry of CLECs into the market will support the Commission's goal of providing broadly-available access to the Internet for all Americans.<sup>12</sup>

**A. The Commission Should Use Interstate Switched Access Rates As A Benchmark For Commercial Negotiations.**

Interstate switched access tariffs would be a logical source of a benchmark for inter-carrier compensation. The Commission has made clear that a large portion of the traffic carried on ISP-bound calls is, at least from a jurisdictional perspective, a form of interstate access service. The Declaratory Ruling stated that the Commission "traditionally has characterized the link from an end user to an ESP as an interstate access service."<sup>13</sup> For example, the Commission has declared that ESPs are "among a variety of users of access service" in that they "obtain local exchange services or facilities which are used, in part or in whole, for the purpose of completing interstate calls which transit its location and, commonly, another location in the exchange area."<sup>14</sup> The Commission continued its analysis in the Declaratory Ruling, stating that the fact that ESPs are exempt from access charges and purchase their PSTN links through local tariffs does not

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<sup>12</sup> The Commission will not be surprised to learn that its *Declaratory Ruling* has engendered a substantial amount of regulatory and court litigation, as ILECs seek to extract every possible bit of delay and confusion from what should have been a fairly clear outcome. Global NAPs is involved in litigation (including both adjudicatory and rulemaking-type proceedings) with Bell Atlantic on these issues in Massachusetts (where Bell Atlantic unilaterally ceased paying compensation for ISP-bound calls, based on certain statements in the *Declaratory Ruling*) to New York (where Bell Atlantic has threatened to do so), to Maryland (where Bell Atlantic has requested authority not to pay such compensation and has actively resisted entering into an interconnection agreement with Global NAPs that calls for such compensation) to Delaware (where Bell Atlantic has sought to call an emergency halt to ongoing arbitration proceedings in which an arbitrator properly interpreted the *Declaratory Ruling* to permit states to continue to require compensation). Global NAPs is also aware of a recently-filed case in the Eastern District of Virginia where Bell Atlantic has asked a federal district court judge to declare that the compensation provisions of a particular interconnection agreement in Virginia cannot reach ISP-bound calls, even though the Virginia State Corporation Commission has already ruled that such calls are subject to compensation. All of this simply illustrates the urgent need for Commission guidelines within which reasonable commercial negotiations can occur.

<sup>13</sup> *Declaratory Ruling* at ¶ 16.

<sup>14</sup> *Id.*, citing *MTS/WATS Market Restructure Order*, 97 FCC 2d at 860.

transform the nature of traffic routed to ESPs.<sup>15</sup> The Commission concluded that the fact that the Commission "*exempted* ESPs from access charges indicates its understanding that ESPs in fact use interstate access service, otherwise, the exemption would not be necessary."<sup>16</sup> Therefore, it would make sense, jurisdictionally, to use interstate switched access service as the benchmark rate for ISP-bound traffic handled by a traditional CLEC switch.<sup>17</sup>

CLECs may use different technologies to complete calls, and there may be many technological innovations in the near future. Many if not most CLECs, however — including Global NAPs — use traditional telephone switches. For this reason, the use of switched access service as a benchmark for inter-carrier compensation for interstate ISP-bound traffic will advance the Commission's policy goals in several ways.

First, the rate is high enough to be compensatory for more than just telephone-switch-delivered calls. Second, the ILEC would have the incentive to reduce switched access rate levels to as low a level as possible. This has been an objective of the Commission for quite some time; if switched access rates were the benchmark for inter-carrier compensation it would be in the business interest of ILECs *reduce, rather than maintain* those rates. Finally, the benchmark would apply in the absence of another negotiated rate; thus, it would break the current deadlock over reciprocal compensation.

#### **B. The Local Termination Rate Could Also Serve As a Benchmark.**

While reliance on switched access rates as a "proxy" for ISP-bound call delivery appears almost compelled by the logic of the Commission's ruling that such traffic is a form of interstate access, another, and in some sense simpler, alternative would be to direct that calls to ISPs be treated as local calls under Section 251(b)(5) in the absence of a specific agreement by

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<sup>15</sup> *Id.*

<sup>16</sup> *Id.*, citing *MTS/WATS Market Structure Order*, 97 FCC 2d at 860 (emphasis in original).

<sup>17</sup> See Affidavit of Lee L. Selwyn at ¶¶ 19-21.



the parties to use a different treatment.<sup>18</sup> As the Commission observed in the Declaratory Ruling, it has directed that calls to ISPs be treated as local calls for both access charge and separations purposes, and it would not be unreasonable to extend that same treatment to Section 251(b)(5) as well.<sup>19</sup>

Such an approach could be justified on three main grounds. First, while as a technical matter there are few features to distinguish a switched access minute from a switched local minute, the technical differences that do exist point towards treating ISP-bound calls as local.<sup>20</sup> Second, because ISP-bound calls are dialed as normal 7- or 10-digit local calls by the end user, there is no obvious way to easily track ISP calls, as opposed to other traffic, for billing purposes. A general rule that such calls be treated just like local calls for purposes of Section 251(b)(5) would tend to minimize the need to develop special billing arrangements or to rely on estimated quantities (which can lead to disputes) in actual practice. Third, if ISP-bound traffic

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<sup>18</sup> See Affidavit of Lee L. Selwyn at ¶¶ 22.

<sup>19</sup> In practical terms much of the traffic between an end-user and an ISP during a dial-in session is purely "local" traffic even under the analysis in the *Declaratory Ruling*. For the majority of the time that a dial-up customer is on line, the *only* signals being exchanged begin and end with the end user's and ISP's CPE. Once the end user's modem and the ISP's modem are connected, they "talk" to each other constantly. This constant CPE-to-CPE exchange of information keeps the two devices "in sync" so that data can be transmitted as fast as possible. These signals sound to the human ear like static, but they are actually carefully crafted by the modem equipment, and are critical to the integrity of the connection. They continue constantly, even when higher-level information (web sites, emails, etc.) are not being transmitted. As a result, for most of the duration of an average dial-in session, these signals are the only traffic being sent, because end users typically review the data they get before requesting more data.

In addition, many ISPs have configured their systems so that higher-level data that may have originated with "the Internet" are actually stored locally. By far the most common higher-level data transmitted between an ISP and end users relates to one or more of three information services: email and the World Wide Web. It is widely known that local ISP caching of commonly accessed web sites is increasing. And, when a customer receives email, the message is sent to the customer's ISP, who maintains a local computer that stores email messages. When a customer logs on to check his or her email, the messages are downloaded *from the ISP's local email server* to the customer's computer.

These considerations support a Commission ruling (under its authority under the *AT&T v. Iowa Utilities Board* case to issue rules governing how states must apply Sections 251 and 252 of the Act) that in the absence of a specific contrary agreement, the portion of dial-up traffic that does represent end user communications with distant Web sites should be treated like any other local traffic.

<sup>20</sup> See Statement of Fred Goldstein, Exhibit 1 hereto.

is not legally subject to Section 251(b)(5), while states may voluntarily undertake to resolve disputes between ILECs and CLECs regarding such traffic, there would not appear to be any obvious legal basis either for transferring authority to them to do so, or to require or encourage them to do so.<sup>21</sup>

There is nothing contradictory about a call being classified as *local* even though the traffic carried on the call is jurisdictionally interstate. For example, consider the treatment of calls between a landline LEC and a Commercial Mobile Radio Service ("CMRS") provider. In that situation, the Commission specifically ruled that calls that originate and terminate within the CMRS provider's Major Trading Area ("MTA") are to be treated as local for purposes of reciprocal compensation.<sup>22</sup> The fact that such calls typically cross the boundaries of landline LECs' local calling areas and, in most MTAs, state lines as well did not affect the Commission's conclusion that all intraMTA calls are local for purposes of reciprocal compensation between ILECs and CMRS providers.

In any case, Global NAPs believes that, from the perspective of developing a benchmark that could be used for inter-carrier rates for ISP-bound traffic, the best approach is not to look at the technical aspects of call delivery, but to designate an existing rate that is in accord with the Commission's jurisdictional ruling. This would hasten the commercial negotiations surrounding interconnection that the Commission seeks to promote. To date, disputes over reciprocal compensation have been one of the major reasons that interconnection arrangements have not been concluded between CLECS and ILECs.<sup>23</sup>

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<sup>21</sup> In this latter regard, a hybrid approach may be possible. Given the Commission's essentially plenary authority over the proper interpretation and application of Section 251(b)(5) in light of the Supreme Court's ruling in *AT&T v. Iowa Utilities Board*, the Commission could simultaneously (a) declare that ISP-bound calls are properly subject to reciprocal compensation arrangements under Section 251(b)(5) and (b) set a separate proxy rate for such calls equal to the affected ILEC's interstate local switching rate element.

<sup>22</sup> *Local Competition Order* at ¶ 1036.

<sup>23</sup> As noted above, ILECs such as Bell Atlantic are waging a regulatory war against paying CLECs for the work CLECs do, *on behalf of the ILECs' own customers*, in routing ILEC-originated traffic onward to ISPs that the ILECs' customers want to call.

### **III. GLOBAL NAPS RECOMMENDS THAT COMMERCIAL NEGOTIATIONS BE CONDUCTED PURSUANT TO SECTIONS 251/252, RATHER THAN GOVERNED BY FEDERAL RULES.**

Global NAPs supports the Commission's tentative conclusion that the inter-carrier compensation for interstate telecommunications traffic should be governed prospectively by interconnection agreements negotiated and arbitrated under sections 251 and 252 of the Act.<sup>24</sup> Global NAPs further concurs that it might be more cost efficient and effective to have all interested parties participate in an arbitration about inter-connected traffic, rather than to do so piecemeal. The benefits to this approach would be: 1) small and large carriers alike would be represented, 2) all views would be presented at once to the arbitrator, 3) the cost of arbitration would be shared to some extent by the participants and 4) all participating carriers could seek redress in any subsequent disputes from the same knowledgeable arbitrator.

Global NAPs believes that state commissions have the legal responsibility pursuant to Section 251(b)(5) to "establish reciprocal compensation arrangements for the transport and termination of telecommunications."<sup>25</sup> Although Global NAPs expects that these arbitrations would take place at state commissions, it is not inconceivable that the same approach could be followed by the Common Carrier Bureau if the state commission was either unwilling or unable to handle an omnibus arbitration. Section 252(e)(5) would provide the Commission the authority to handle such an omnibus arbitration within 90 days of taking or receiving notice of a state commission's failure to act. For competitors, the most important consideration in the choice of venue would be to obtain swift and certain resolution of any subsequent disputes.

The adoption of a new, separate set of Federal rules governing inter-carrier compensation for ISP-bound traffic is likely to become mired in the same sorts of disputes that have occurred in the pricing of unbundled network elements. Inevitably, Federal rules take time to be promulgated because of the necessary procedures involved. If one lesson has been learned

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<sup>24</sup> NPRM at ¶ 30.

<sup>25</sup> 47 U.S.C. § 251(b)(5); see also *Local Competition Order* at ¶ 1027.

so far in negotiation and interconnection pursuant to the Act, it is that a proxy that will promote the process is infinitely better than the pursuit of a perfect rule that will delay the process indefinitely. As long as they are able to make a profit, new entrants with limited capital seek swiftness and certainty, rather than exactitude. Moreover, ILECs need the influx of CLECs into the market to diminish the impact of the exponential increase of ISP-bound calls on their networks. Finally, the delay resulting from a rulemaking would not serve the Commission's goal of rapidly delivering the benefits of Internet access to the American public.

#### **IV. CONCLUSION**

Global NAPs concurs with the Commission that commercial negotiations, driven by market forces, are the best means of establishing the terms of interconnection contracts. To make such commercial negotiations viable, Global NAPs believes that a benchmark for the pricing of inter-carrier compensation for ISP-bound traffic is necessary. Specifically, Global NAPs recommends that ISP-bound traffic handled by a switch owned by a CLEC should be treated for rating purposes like switched access services. This comports well with the Commission's determination that ISP-bound traffic is jurisdictionally interstate and has traditionally been characterized as an interstate access service. Global NAPs further recommends that an existing tariffed rate be used as a benchmark, rather than engage in the lengthy process of developing a set of Federal rules. These suggestions are offered to advance the Commission's goals of ensuring the broadest possible entry of efficient new competitors, eliminating incentives

for inefficient entry and irrational pricing schemes, and providing to consumers as rapidly as possible the benefits of competition and emerging technologies.

Respectfully submitted,

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## **EXHIBIT 1**

**Before the  
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Inter-Carrier Compensation  
for ISP-Bound Traffic

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**STATEMENT OF FRED GOLDSTEIN**

1. My name is Fred Goldstein. I am a Manager in the Communications and Information Technology group at Arthur D. Little Inc. My business address is at Arthur D. Little, 20 Acorn Park, Cambridge MA 02140. I have worked in the telecommunications and data network field since 1977, when I joined the consulting firm of Economics and Technology Inc. I was later Telecommunications Manager at Bolt Beranek and Newman Inc., and served as a telecommunications consultant and as a strategic planner for the network products business of Digital Equipment Corp. At Digital, I represented the company at ANSI-accredited standards bodies dealing with ISDN, Frame Relay and Asynchronous Transfer Mode ("ATM") networks, and I received three patents for ATM congestion management and switching. I later became a member of BBN Corp.'s Network Consulting Practice, largely dealing with dial-up Internet Service Provider ("ISP") activities. I now belong to the Arthur D. Little practice that deals with telecommunications and information technology. I am the author of the book "ISDN In Perspective" (Reading MA: Addison-Wesley, 1992) and have taught courses for Northeastern University and National Technological University. I have previously appeared as an expert witness in regulatory proceedings, regarding ISDN pricing and related issues, in New Jersey and Maryland. I hold a bachelor's degree in Government from Skidmore College.

2. This statement is based on my more than 20 years' experience in the telecommunications and data networking business. It does not, however, represent an

"official" position of Arthur D. Little; instead, it has been prepared on behalf of Global NAPs Inc.

3. This statement addresses CC Docket No. 99-68, and explains why compensation should be paid to Competitive Local Exchange Carriers ("CLECs") who provide terminating port connections to Internet Service Providers. The explosive growth of the Internet over the past several years has largely been fueled by retail dial-up access, which is dependent upon low-cost connectivity provided subject to the FCC's "Enhanced Service Provider Exemption." Inasmuch as many ILECs have been unhappy about the continued existence of this exemption, they have at times been less than ready, willing and able to provide ISPs with the business-line-rate connectivity required to minimize busy signals.

4. CLECs play a vital role in preserving access to the Internet, and do so in a way that ILECs have been unable or unwilling to do. Their facilities are a critical piece of the provision of affordable Internet service to the public at large, and by building out these facilities, the CLECs have essentially rescued the ILECs from potential traffic overload, while allowing the ILECs to generate new revenues from users making calls via CLECs to ISPs.

5. CLECs have taken a large share of the market for circuits serving retail dial-up ISPs; at the same time, ISPs represent a vital market for CLECs, a customer segment that provides a natural base for this emerging industry. ILECs are not principally losing this market share *because of* reciprocal compensation. While CLECs typically provide lower prices to the ISPs, CLECs actually bring a fundamentally different value proposition that is far more compelling than price alone. This can be summarized in one simple notion: CLECs actually *like* doing business with ISPs, and treat them as valued *customers*. ILECs for the most part only begrudgingly do business with ISPs, and when they do, they attempt to fit them into *ratepayer* molds designed for an earlier era.

6. *CLECs provide collocation facilities to ISPs.*

a. Certainly a major part of the cost of local telephone service is the local loop. Most of the cost of an analog line is in the loop plant, not the switch or trunk plant. (ILEC digital services are usually priced higher than would be the case for equivalent numbers of voice circuits, even though their cost is lower.) CLECs recognize



the economy that is provided by removing loop costs from the equation where this is technically feasible. Rather than requiring the subscriber (ISP) to pay for loop transmission facilities to their own or a leased premise, CLECs welcome ISPs into their own buildings. They typically provide floor space on a per-rack basis, with very little up front cost and no requirement for individual collocation cages. While recent FCC decisions have simplified collocation requirements for CLECs in ILEC central offices, only CLECs generally provide non-affiliated ISPs with collocation space.

b. Given today's technology, a single rack can terminate up to 224 ISDN Primary Rate or Channelized T1 circuits, as many as 5376 modems.<sup>1</sup> By putting such racks in the CLEC's collocation space, huge transmission costs can be avoided. Because only a fraction of an ISPs' total customer base is actually on-line at any one time, the bandwidth required between the modem rack and the ISP's data facilities (including its servers and upstream network provider) is around one tenth of the PRI loop bandwidth. Thus, for each approximately 10 PRIs feeding the collocated rack, one DS-1's worth of bandwidth is required out of the CLEC's facility. Because ILECs generally do not provide collocation to ISPs, these savings are not available to ISPs who obtain their PSTN connections from an ILEC.

7. *CLECs provide reliable ISDN PRI service.*

a. The preferred physical medium of interconnection for ISPs is ISDN PRI. This provides the highest-quality modem connections, as it has full 64000 bps clear channels. While ILECs may provide ISDN PRI in some locations, its availability is often quite limited. PRI is offered in most major cities and in some smaller markets, but rarely in rural areas. Sometimes, when offered, it is marked up well beyond its cost differential vis-a-vis Channelized T1 or analog service.

b. The newer "56k" (V.90) modems require all-digital connections from the ISP to the PSTN in order to provide service above 33.6 kbps. These devices are actually optimized for the use of PRI at the ISP end of the connection<sup>2</sup>, and provide mildly degraded service with trunk-side Channelized T1, dramatically degraded service

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<sup>1</sup> This is based on putting four Nortel Networks CVX 1800 servers in one rack. More typical products support 10-56 T1s per rack. Analog terminations are essentially never used by collocated ISPs.

<sup>2</sup> Callers using ISDN Basic Rate Interface to originate calls to ISPs also depend upon the availability of PRI at the receiving end, as it is generally not possible to terminate an ISDN data call onto a non-ISDN facility.

with line-side Channelized T1 (which some ILECs still insist on providing). CLECs almost always offer PRI; when offered, it generally applies to all of their rate centers, including outlying areas where the ILEC does not provide it. Thus, the modem connection speeds that an ISP can offer its customers are often higher with a CLEC than with an ILEC. Because end users generally value higher access speeds, the superior CLEC service in this arena is a very attractive factor when ISPs consider which carrier to purchase their dial tone lines from.

8. In assessing the vital contributions that CLECs make to assuring that consumers have reliable and reasonably-priced dial-up access to the Internet, it is important to assess the impact upon the ILECs if the CLECs stopped providing ISPs with incoming service, as that is a logical result if the ILECs paid the CLECs nothing for completing ILEC-originated calls. As described below, that impact would be severe and substantial.

9. The rapid growth of the Internet has largely occurred since the passage of the 1996 Telecom Act and the subsequent emergence of CLECs. A large share of the Internet's incremental dial-in growth has gone to CLECs, not ILECs. Thus the ILEC networks are not now prepared to handle the additional traffic that the CLECs currently handle.

10. In 1996, several ILECs (notably Pacific Bell and Bell Atlantic) informally requested that the Commission have ISPs reclassified as IXCs; that is, to remove the "ESP exemption." This effort led to the FCC's "Notice of Inquiry" regarding the impact of Internet usage on the PSTN. The ILECs' position papers stressed the "harm" being caused by heavy ISP traffic *on their terminating local switches*. This harm to the ILECs' network has not materialized, but this is not because the ILECs adapted their networks to meet the specialized requirements of ISPs. To the contrary, it is because CLECs have accepted this task, allowing the ILECs to focus on the parts of the network which they handle best.

11. An ILEC network is generally provisioned around longstanding assumptions of typical voice traffic patterns. The average residential line is in use less than a tenth of the time. Thus central office switches assume that "line concentration" is a valid approach to cost control. For example, on the common AT&T Technologies (pre-Lucent vintage) 5ESS, the Analog Line Unit (ALU) supports 512 lines, but only 64

simultaneous connections, an 8:1 concentration ratio. On these switches, only the digital trunk ports are essentially non-blocking, but even these are somewhat constrained by the limit of 512 simultaneous connections per Switch Module (SM). A large switch typically has many SMs interconnected to each other, creating a potential blocking situation.

12. CLECs who provide service to ISPs do not provision switches in this manner. They configure their switches so that there will be non-blocking interconnection between ports. The most common CLEC switches are the Lucent 5ESS-2000, whose switch module, the SM-2000, supports over 10,000 simultaneous calls, and the Nortel DMS-500, which was designed for CLEC use and connects PRIs to a nonblocking core. Equipment vendors are actively deploying technologies that will allow CLECs to perform these functions even more efficiently. These specialized technical arrangements enable CLECs to efficiently handle the high concentrations of traffic received by ISPs, while the ILECs concentrate on the lower-average-traffic subscribers who originate most of the traffic.

13. What is notable here is that the traffic flow from ILEC to CLEC is not unbalanced strictly for *financial* reasons; rather, it is unbalanced for *technical* reasons. The business of terminating traffic for ISPs is technically distinct from the business that the ILECs designed their networks for. As a result, the pairing of the two types of carriers is *complementary* to both. The industry has at least implicitly recognized this complementarity, as shown by the fact that ISPs have been migrating to the more-efficient CLECs in order to meet their needs for connections to the PSTN. (*See below.*) As a result, the CLECs, not the ILECs, have built up the high-traffic-concentration portion of the PSTN since 1996, providing the terminating capacity for *millions* of modems.

14. This CLEC capacity simply does not exist on the ILEC networks. Consequently, if the CLECs were to cease to handle these terminating calls, and the ISPs instead had to obtain their PSTN lines from ILEC switches, the ILEC networks almost certainly would collapse, at least in places. In this regard, the doom-and-gloom scenarios painted by the ILECs in their 1996 submissions to the FCC were avoided *because most of the additional traffic went to the CLECs, who largely financed this growth via reciprocal compensation.*

15. It is also important to recognize that as a technical matter, ISP-bound calls are basically technically indistinguishable from other local calls. Indeed, an ISP-bound call is technically indistinguishable from a voice call. While as a legal matter it may be jurisdictionally interstate based upon what often happens after the call has been answered, the *call* itself is handled just as any other local call. The caller, typically an ILEC subscriber, dials a 7 or 10 digit local number. This is routed to a destination switch based upon prefix code or, where a number has been ported, via the location routing number, or "LRN" of the dialed number. *Local* number portability, not interexchange carrier selection, is used to specify the terminating carrier.

16. The call may go directly to the CLEC switch via a direct end office trunk ("DEOT"), or may go via an ILEC tandem switch. Ordinary Signaling System 7 (ISUP) is used for these calls. The terminating CLEC switch offers the call to the ISP's modem bank using ordinary ISDN PRI or Channelized T1 robbed bit signaling. Call supervision is returned when the modem answers, regardless of whether or not the end user's log-in attempt is subsequently validated "in band." Thus, like a voice call, the caller (if on a measured plan) is liable for the cost of the call, regardless of whether or not any connection to the Internet was even allowed, or even if the ISP's upstream data link is down.

17. While it is true that voice calls are, on average, shorter than calls to ISPs, to some extent this longer duration makes ISP-bound calls, on average, *cheaper* than voice calls on a per-minute basis. Reciprocal compensation is typically based on minutes of use, but the originating carrier's Signaling System 7 expenses are based on call originations, not minutes of use. Longer calls, like those to ISPs, have a lower per-minute cost because the SS7 cost is spread over more minutes of use.

18. Long distance interconnection is quite different. A call handed off by a LEC to an interexchange carrier (IXC) is *not* supervised by the IXC; supervision is returned only when a terminating LEC at the far end of the call provides it. The IXC is selected by presubscription or by CIC dial-around (101xxxx) code, not by destination prefix or LRN. Interconnection is far more likely to make use of an access tandem, rather than a local tandem or DEOT. Signaling between the LEC and IXC uses Signaling System 7; calls to ISPs use PRI or Channelized T1 robbed-bit signaling.

19. ISP-bound calls are thus quite similar to voice calls that are delivered in bulk to large users. Telemarketing and customer-support centers, for instance, also

frequently have large volumes of traffic terminating on PBX systems or Automatic Call Distributors. From a traffic perspective, an ISP's modem pool looks very much like an incoming PBX trunk group.

20. A fundamental regulatory difference between Interstate Access calls and Local Exchange calls is in the manner in which revenues are divided between participating carriers. Ample precedent exists for local-exchange calls to be carried between different LECs; numerous cities, including Los Angeles, Dallas and Seattle, have more than one ILEC in their local calling areas. In such cases, local calls are normally given Sent Paid treatment, with the originating caller collecting the revenue. Since ILECs have typically had nearly-balanced flows of traffic between themselves, "bill and keep" has been the most common form of reciprocal compensation. Non-exempt Interstate Access calls, on the other hand, are based on a hierarchical (non-peer) model, in which IXCs pay LECs for both legs of the call. In exchange for this, the LECs do not bill the caller for the Access portion of the call. Originating access is in effect handled on a Collect basis, while terminating access is Sent Paid.

21. If, however, more than one LEC is involved in either Access leg of the call, then the Access charges are divided between them. This occurs, for instance, when the originating or terminating LEC does not have its own tandem facilities or interconnection with the IXC. The IXC attaches to the larger LEC's tandem facilities in order to reach the smaller LEC's end office. Some of the smaller LEC's Access charge is paid to the larger LEC as a transit fee.

22. Internet access can be described as having an originating component (one or more LECs) and an IXC-like Interstate component (the ISP) but no terminating LEC. When a CLEC provides the direct attachment to the ISP and an ILEC provides the direct attachment to the originating subscriber, then the CLEC is in effect providing a transit service, for which it incurs costs and should be compensated. Because ISP Access calls are, under the ESP Exemption, billed to the originating party as Sent Paid local calls, the revenue for the call is collected by the originating subscriber's LEC, not from the Interstate component (the ISP).

23. To investigate further the contribution that CLECs make to meeting the needs of consumers to reach their ISPs efficiently and economically, we have undertaken a preliminary review of the apparent market shares of CLECs, measured by ISPs served,

within our home area market (Boston, LATA 128). Whether or not that market is typical, it clearly has a well-developed Internet industry that makes extensive use of CLECs. As a snapshot survey of which LECs provide service to which ISPs, we examined the list of local ISPs posted by the Boston Globe on their web site (<http://www.boston.com/technology/access>). This is by no means comprehensive, but we were able to locate lists of local access numbers for forty ISPs listed therein.

24. For each of these ISPs, we identified the terminating LEC based upon the prefix code assignment. We note that number portability is now in effect, so it is possible that a Bell Atlantic (the sole ILEC in the LATA) number has been ported to a different carrier, but even without assuming this, it is clear that Bell Atlantic's market share has dwindled to fewer than 1/3 of ISPs, most of whom also use CLECs. The remaining terminating traffic is on CLEC networks. Even bellatlantic.net traffic is mostly handled now on AT&T's network, not Bell Atlantic's!

25. The attached Table 1 shows the results in detail. What is striking about the figures as a whole, however, is the degree to which non-Bell Atlantic carriers — that is, CLECs — have stepped in to meet the growing demand of Massachusetts consumers to make an increasing number of calls to ISPs.

CLEC	# OF ISPs	%	CUM. %
Global NAPs	19	33.3%	33.3%
Bell Atlantic	13	22.8%	56.1%
XCOM (Level 3)	12	21.1%	77.2%
WorldCom (ex-MFS)	8	14.0%	91.2%
TCG (now AT&T)	3	5.3%	96.5%
RCN	1	1.8%	98.3%
RNK	1	1.7%	100%
TOTAL (some ISPs use more than one)	57	100%	

26. By virtue of the CLEC efforts embodied in these figures, Bell Atlantic has been spared enormous increased investments in switching gear to route these calls to the appropriate ISP lines. Yet it has benefited by strong second-line growth, wherein much of the demand for second lines comes from subscribers *originating* calls to ISPs.

27. In conclusion, we have shown that CLECs play a vital role in providing access to the Internet for retail subscribers. Because of the sent-paid nature of this traffic, traffic-sensitive costs borne by the CLECs must be recovered from the originating ILECs.



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Fred R. Goldstein

TABLE 1

This table shows the ISPs and the Local Exchange Carrier(s) that provide their modem dial-in access. Where a four-digit number is shown, that suffix is applied uniformly across the CLEC's aggregated prefixes. For example, Acunet's numbers include 617-507-3474, 617-344-3474, 781-207-3474, etc.

ISP	LEC(s)
Acunet	GNAPs -3474
AOL	mixed (mostly Bell and TCG)
BICnet	GNAPs
Bitwise	WTI -4998
CAPEInternet	XCOM -1111
Celticweb	GNAPs -4638
Channell	XCOM -4111
Compuserve	Bell
Concentric	WTI
CWIX	Bell
Cybercom	WTI, XCOM
Datablast	WTI
Dreamcom	XCOM
Earthlink/Sprint	XCOM -4492, some old Bell numbers too
Erols-RCN	RCN, ACC, WTI
Galaxy	XCOM -4447
GOTI	Bell, XCOM -4774
Hardlink	Bell
IBM.net	TCG
ICI	GNAPs, XCOM
Javanet	GNAPs -5282
Mindspring	GNAPs -6884
Net1Plus	GNAPs -6381
Netcom	GNAPs -4246
Netway	XCOM -4545
Network Innovations	XCOM
Orbit	GNAPs -9464
Prime-x	GNAPs -8623
Prodigy	GNAPs -9801
Shore	GNAPs -3300, WTI, TCG, Bell
SPlusNet	GNAPs -6500
Starnet	GNAPs -7827
TIAC	Bell, RNK (?)
Ultramet (RCN)	RCN -8112, XCOM -8111
UUNET	WTI
World.STD	Bell



WorldKey  
Xensei  
XpressNet  
Ziplink

Bell  
GNAPs -6060  
XCOM -4121  
GNAPs -5465

There are also several major ISPs not listed on the boston.com web site. We note their local access providers here. Many "national" ISPs make use of a different ISP's access service; UUNET appears to be the largest such wholesaler.

BellAtlantic.net  
GTE.net  
MSN  
Masscomm  
WorldLynx  
WorldNET

mostly TCG (!) via IBM resale; some Bell  
mostly WTI via UUNET resale; some Bell  
mostly WTI via UUNET resale; some Bell  
GNAPs -8623  
GNAPs -5599  
GNAPs -3282 (not AT&T Worldnet)

Note that the totals in the summary chart add up to more than the 46 named ISPs, because some ISPs have multiple local exchange carriers.

## **EXHIBIT 2**

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1. My name is Lee L. Selwyn. I am President of Economics and Technology, Inc., One Washington Mall, Boston, Massachusetts 02108. Economics and Technology, Inc. (ETI) is a research and consulting organization specializing in telecommunications economics, regulation, and public policy. My Statement of Qualifications appears as Attachment 1 to this affidavit and is made a part hereof. I have testified before numerous state regulatory agencies and submitted reports and affidavits before this Commission on numerous occasions dating back to the mid-1970s.

2. This Affidavit is being submitted on behalf of Global NAPs, Inc. ("Global NAPs"). Global NAPs is a competitive local exchange carrier ("CLEC") with operations in Massachusetts, New York, New Hampshire and other states. Global NAPs provides many Internet Service Provider ("ISP") customers with telephone service on the public switched network that allows the ISPs' end users to reach them by means of a dial-in connection between the end users' modem equipment and the modem equipment of Global NAPs' ISP customers. Global NAPs, therefore, has a direct interest in the regulatory rules governing inter-carrier compensation for such calls.

3. The Commission has sought comment on the question of whether it should establish national rules regarding inter-carrier compensation for ISP-bound calls. *Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68.*<sup>1</sup> The purpose of this Affidavit is to provide the economic basis for requiring that the originating LEC pay the LEC serving the ISP (the "terminating LEC") for the functions that the terminating LEC performs on behalf of the originating LEC's end users.<sup>2</sup> In summary:

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1. In the Matter of *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, and *Inter-Carrier Compensation for ISP-Bound Traffic*, CC Docket No. 99-68, *Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68*, FCC 99-38, Adopted February 25, 1999, Released February 26, 1999. ("*Declaratory Ruling*").

2. I am aware of the essentially technical and legal/regulatory controversy about whether a call from an end user to an ISP in some sense "terminates" at the ISP's premises or, instead, continues on to distant Internet locations. For purposes of this Affidavit, however, those issues are irrelevant, so I use the more natural terminology to distinguish between the "originating" LEC, *i.e.*, the LEC that serves the end user calling the ISP, and the "terminating" LEC, *i.e.*, the LEC that serves the ISP whose modem answers the end user's call.

- As long as the Commission retains its long-standing policy of exempting ISPs themselves from paying access charges, it is economically essential that the LEC completing calls to ISPs be compensated by the originating LEC.
- At least for CLECs that use standard telecommunications switches to provide dial-in services to ISPs, there is no substantial technical or policy basis to view the functions they perform as any different from traditional "local switching" functions.

4. The specific purpose of this affidavit is to analyze the economics of processing ISP-bound traffic as a basis for reciprocal compensation, and to recommend, based upon that analysis, that the Commission establish (either by rule or as a negotiating guideline) that the terminating LEC should receive a per-minute rate that reflects an appropriate local switching rate, whether based on an interstate figure (such as the incumbent local exchange carrier's ("ILEC's") tariffed interstate local switching rate element) or an intrastate figure (such as a "reciprocal compensation" rate established by negotiation or arbitration for the transport and termination of local traffic).

5. Historically, end user calls to ISPs have been treated for all purposes as local calls. ISPs are assigned ordinary North American Numbering Plan (NANP) telephone numbers associated with specific, designated rate centers on the PSTN in order to receive dial-up calls from their customers. Because these calls are expressly exempt from interstate switched access rate treatment, they have been rated to the end users as local or toll calls depending upon the respective telephone numbers assigned to the ISP and the originating end user, and the specific details of that end user's *local* calling plan. Notwithstanding the jurisdictionally interstate nature of ISP-bound traffic, ISPs may not be charged per-minute interstate access charges for their PSTN connections.

6. The manner in which calls from end users to ISPs are physically routed in a multi-LEC serving arrangement is well described in the *Declaratory Ruling*:

... In general, an originating LEC end user's call to an ISP served by another LEC is carried (1) by the originating LEC from the end user to the point of interconnection (POI) with the LEC serving the ISP; (2) by the LEC serving the ISP from the LEC-LEC POI to the ISP's local server; and (3) from the ISP's local server to a computer that the originating LEC end user desires to reach via the Internet. ...<sup>3</sup>

More specifically, the originating LEC (typically an ILEC) routes the call from the originating Class 5 end office to a Class 4 tandem office from which it and other calls from other Class 5 end offices that are bound for the same CLEC are aggregated and routed to the CLEC's Point of Interconnection ("POI") with the ILEC. The CLEC then routes the call from the POI through its network to the ISP.

7. If the ISP was served directly by the ILEC, calls would be routed either from the originating Class 5 end office to a tandem office, and then to the terminating Class 5 end office from which the ISP's service is furnished, i.e., to which the ISP's access lines are connected, or directly to that end office via a Class 5-to-Class 5 interoffice trunk. Where a high volume of traffic exists between the originating and terminating end offices, the use of direct interoffice trunk routing that bypasses the tandem may in some cases be more efficient. The matter of direct vs. tandem routing is an economic decision for the ILEC to make based upon the volume and variability of the traffic, and the relative costs of direct trunking and tandem switching in each instance.

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3. *Declaratory Ruling*, at para. 7.

8. The same economic tradeoff as between direct interoffice vs. tandem routing exists where the ISP is served by a CLEC rather than by the ILEC. That is, the ILEC may route CLEC-bound traffic directly from those of the ILEC's end offices where traffic volume and variability conditions make this method more efficient, and via a tandem where that type of routing is most efficient. Either way, when the ISP is served by a CLEC rather than by the ILEC, the CLEC incurs, and the ILEC avoids, the costs of providing the terminating end office switching functions.<sup>4</sup>

9. The Commission determined in the *Declaratory Ruling* that the "telecommunications" does not end at the ISP's point of presence (POP), but extends through the Internet to the ultimate location on the Internet (e.g., a web site) that the originating end user wishes to reach. The Commission's specific analysis of this point took place in the context of concluding that for *jurisdictional* purposes, the information services supplied by ISPs and the underlying telecommunications by which those information services are transmitted are "inseparabl[e]," and *for that reason*, "for jurisdictional purposes," the Commission analyzes "ISP traffic ... as a continuous transmission from the end user to a distant Internet site."<sup>5</sup>

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4. It has sometimes been suggested by ILECs that the presence of the CLEC switch between the ILEC's facilities and the ISP is redundant or otherwise unnecessary. That is true only if it is assumed that the correct "default" case is a monopoly in which all end users are served by the ILEC. If the default case is assumed instead to be a competitive telecommunications market, as envisioned by the *Telecommunications Act of 1996*, then *any* customer served by a CLEC will have the CLEC switch in some sense newly interposed "between" the ILEC and the customer. Nothing about the status of ISP-bound calls is distinctive in this regard. The existence of CLECs serving customers that the ILEC previously could have or would have served is the *sine qua non* of competition.

5. *Id.*, at para. 13.

10. Nothing about this essentially legal analysis of the scope of the Commission's jurisdiction has any effect whatever upon the physical routing of calls that ILEC end users make to ISPs served by CLECs, or upon the nature of the physical switching and transport functions performed by CLECs in routing those calls to the appropriate ISP dial-in line. In fact, the switching and transport functions associated with carrying the ISP-bound call from the originating end user to the ISP's POP are identical to and indistinguishable from any inter-LEC two-end-user call. That is, from the point of view of the PSTN and the specific requirements for PSTN routing, switching and other functionality, the ISP POP is in every sense an "end user" that is receiving incoming PSTN calls. Confirming this is the fact that within a single PSTN "call" the end user may connect to multiple web sites via routing and switching functions furnished and managed by the ISP *without invoking any PSTN functions other than that of maintaining the current call in place*. Nothing in the language of the *Declaratory Ruling* conveys any finding that the interaction between the PSTN and the Internet in any way modifies the end-user to end-user function of the PSTN in transporting a call from the originating end user (the Internet subscriber) to the terminating end user (the ISP). (Indeed, any such finding would have been technically erroneous.) Again, the analysis on this point was focused solely upon the basis for the Commission's legal jurisdiction over dial-up calls to ISPs, and not upon the physical functions performed by CLECs in routing traffic to ISPs.

11. Routing a call from an originating end user to an ISP's incoming modem line is technically identical to routing a call from the same end user to any local telephone number served by the incumbent or other LEC. The switch serving the recipient end user's line



receives the incoming call on a trunk from another switch (either another end office switch or a tandem switch), identifies the appropriate line to "ring" (i.e., the line on which to signal an incoming call), and then proceeds to generate a ringing signal to the recipient access line. When the incoming call is answered (whether by a person picking up a handset or by a modem automatically going "off-hook") the ringing signal is immediately terminated and a direct connection between the calling and called parties is established. This same sequence of events takes place when someone in Washington D.C. or the Maryland and Virginia suburbs calls the Commission, their local bank, or any other local call, *including a call to an ISP POP whose number is within the originating party's local calling area*. In terms of the use of local network resources, it is also essentially the same thing that happens when an incoming long distance call reaches the switch serving the called customer. On a technical basis, there is no reason to distinguish among any of these types of PSTN traffic.

12. As noted, the Commission has since 1983 specifically exempted ISPs from being charged per-minute access charges for calls to their modem lines.<sup>6</sup> Calls to ISPs are rated as local or toll based upon the applicable tariff treatment for the specific route involved, i.e., for calls from the caller's number to the ISP's telephone number; as a practical matter, the vast majority of ISP-bound calls are rated as local.

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6. As the Commission notes in the *Declaratory Ruling* at para. 5, footnote 10, "[t]he exemption was adopted at the inception of the interstate access charge regime to protect certain users of access services, such as ESPs, that had been paying the generally much lower business service rates from the rate shock that would result from immediate imposition of carrier access charges. See *MTS/WATS Market Structure Order*, 97 FCC 2d at 715."

13. Local calls are typically "sent paid" by the originating party. There are a wide variety of local calling plans in effect around the country, but typically consumers are offered flat-rated unlimited or per-message untimed local calling to some defined set of exchanges. It is also quite common for there to be an offering with a lower monthly recurring charge, but that includes per-call or per-minute charges (in some cases after a certain minimum number of calls has been made). These plans were typically established with some rate for the "dial tone line" and then an allowance for usage. In this regard, local usage charges have typically been set at levels well above the cost of the local usage itself. Thus, whether originated from a measured rate or a flat-rate line, the call to the ISP is "sent paid" by the calling party and as such generates originating call revenue for the originating LEC, which in most cases is the ILEC.

14. Since ISP-bound "local" calls are in all instances sent-paid by the calling party and as such are a source of local revenue for the ILEC, where the ISP-bound call is handed off to another LEC for delivery to the ISP, it is reasonable and appropriate that the originating LEC compensate the terminating LEC for the costs that the latter incurs and that the former avoids. Indeed, it is for this reason, and the others mentioned above, that to the best of my knowledge virtually every state that has to date considered the question of reciprocal compensation for ISP-bound traffic — including a number of states to have considered the question following the issuance of the Commission's *Declaratory Ruling* — has concluded that calls to ISPs should be treated as local calls subject to reciprocal compensation under interconnection agreements negotiated pursuant to Sections 251/252.

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15. The Commission's order asserting federal jurisdiction over these calls does not change — and indeed *confirms* — the underlying economic rationale for reciprocal compensation for local call rated ISP-bound calls. An ILEC handing off ISP-bound traffic that is rated as "local" to a CLEC will collect usage revenue from the calling party. A CLEC handling ISP-bound traffic transferred to it from an ILEC will incur essentially the same costs as it incurs handling incoming (non-ISP-bound) traffic that is unquestionably local. These are also essentially the same costs that the CLEC will incur handling incoming traffic that is unquestionably interstate long distance (e.g., a call from a business traveler in San Francisco to the home office in Boston), and for which it will receive terminating access charge compensation. As an economic matter, the CLEC must be compensated for the costs it incurs in performing these switching and transport functions if it is to remain in business.

16. As noted, LECs (whether CLECs or ILECs) are prohibited from charging ISPs per-minute access charges for the ISPs' connections to the PSTN. That indicates that the CLECs must obtain compensation for their work from the originating ILEC, which in turn obtains compensation in the form of usage revenues from the originating caller:

- First, the ILEC receives revenues from its own end users for calls they place to ISPs, whether the ISP is served directly by the ILEC or via a handoff to a CLEC. Those calls are treated as local as far as the end user is concerned, so the usage package and message charges that the ILEC collects from end users provide sufficient revenue that the ILEC can use to compensate the CLEC for delivering calls that the ILEC's end users choose to make.

- Second, independent of revenues, the fact that the CLEC is performing the function of terminating the calls to the ISP enables the ILEC to avoid the considerable costs that it would otherwise have to incur to perform these same call termination functions itself. If the CLEC did not serve the ISP, then the ILEC would. The ILEC would then incur the costs of non-blocking line cards, switch usage, and such other functions as may be required to route, switch, transport and terminate the ISP-bound traffic.

17. ILECs have claimed in the past that their existing end user local usage charges are not sufficient to cover the costs of their own efforts to send calls to ISPs.<sup>7</sup> If that contention has any merit — and I have no reason to believe that it does — the issue is not with the obligation to share revenues with connecting carriers, but with the adequacy of those revenues to begin with. But if an ILEC is entitled to compensation from its originating callers for calls directed to ISPs that are served directly by the ILEC, it is obligated to share those revenues — even if (arguably) inadequate — with CLECs that participate in the delivery of ILEC-originated calls to ISPs.

18. Moreover, if CLECs do not receive compensation from ILECs for the work they do in completing calls that the ILECs' end users make to ISPs — work that permits the ILECs to avoid considerable costs, particularly as the volume of traffic grows — then CLECs will not

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7. See In the Matter of Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing, and End User Common Line Charges, *First Report and Order*, 12 FCC Rcd 15982 (1997), at para. 346.

be able to afford to serve ISPs. The result of denial of reciprocal compensation for such traffic, therefore, would be to re-create an ILEC monopoly on serving ISPs.

19. The question before the Commission is what rules or guidelines to establish for inter-carrier compensation for ISP-bound calls. First, I believe that it is important that the Commission establish some rule or guideline in this area. ILECs have every incentive at this point to take the negotiating position that ISP-bound calls should not receive any compensation at all. In the short run, the ILECs' customers will continue to call ISPs, many of which are and will be served by CLECs. The ILECs reap a pure windfall, in terms of "sent-paid" revenues they do not share and costs that they avoid, for as long as they can maintain a "no payment" position. In the long run, as noted above, a "no compensation" rule for ISP-bound calls would set the stage for a re-monopolization by the ILECs of ISP access to the public switched network. Neither of these outcomes serves the public interest.

20. The question therefore becomes what rule or guideline to establish. While recognizing that different CLECs may provide ISPs with dial-in connectivity to the public switched network using a variety of different equipment configuration, as I understand it in most cases ISPs are served from standard "Class 4" or "Class 5" telecommunications switches owned or leased by CLECs. For those CLECs at least, it is quite clear, as the discussion above shows, that the CLECs are providing what amounts to a local switching function. This suggests that some rate established to recover local switching costs would be a reasonable proxy or negotiating guideline with respect to ISP-bound calls.

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21. In light of the Commission's determination that ISP-bound calls are jurisdictionally interstate, one logical rate to use as a benchmark or proxy to guide inter-carrier negotiations is the ILEC's tariffed interstate access local switching rate element. This has the advantage of being a well-understood figure that, in the case of most ILECs, has been subjected to extensive regulatory review over a long period of time.<sup>8</sup> It also is an "interstate" rate, which, again, seems a logical reference point given the Commission's recent re-affirmation that the traffic in question is, indeed, jurisdictionally interstate.<sup>9</sup>

22. The other logical benchmark or proxy would be the terminating compensation rates established by negotiation and/or arbitration under Sections 251/252 of the Act. Using these rates as proxies would have the advantage of not requiring interconnecting carriers to have to separately identify calls that "look like" any other "local" calls but that are bound for ISPs for the application of one rate, with other, "really local" calls subject to a different rate.

23. Either way, however, *some* rule, guideline or proxy is necessary. As noted above, ILECs have every incentive to promote a system in which ISP-bound calls receive no compensation at all, because that result simultaneously gives them a significant financial windfall and sets the stage for anticompetitive developments in the market for ISP dial-in connections to the public switched network.


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8. This is not to say that any particular ILEC local switching rate element is at the economically correct level; the Commission itself has acknowledged that over time it expects access charges in general to decline towards economic cost in response to competitive forces.

9. That conclusion itself remains controversial, but I assume for purposes of this Affidavit that the Commission itself believes it to be correct and will make its policy decisions accordingly.

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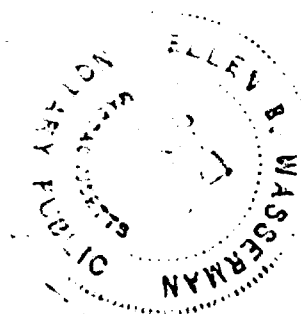
The foregoing statements are true and correct to the best of my knowledge, information and belief.

  
\_\_\_\_\_  
LEE L. SELWYN

Sworn to before me this 9<sup>th</sup> day of April, 1999

Ellen B. Wasserman  
\_\_\_\_\_  
Notary Public

My commission expires 3/31/06.



## **Statement of Qualifications**

### **DR. LEE L. SELWYN**

Dr. Lee L. Selwyn has been actively involved in the telecommunications field for more than twenty-five years, and is an internationally recognized authority on telecommunications regulation, economics and public policy. Dr. Selwyn founded the firm of Economics and Technology, Inc. in 1972, and has served as its President since that date. He received his Ph.D. degree from the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology. He also holds a Master of Science degree in Industrial Management from MIT and a Bachelor of Arts degree with honors in Economics from Queens College of the City University of New York.

Dr. Selwyn has testified as an expert on rate design, service cost analysis, form of regulation, and other telecommunications policy issues in telecommunications regulatory proceedings before some forty state commissions, the Federal Communications Commission and the Canadian Radio-television and Telecommunications Commission, among others. He has appeared as a witness on behalf of commercial organizations, non-profit institutions, as well as local, state and federal government authorities responsible for telecommunications regulation and consumer advocacy.

He has served or is now serving as a consultant to numerous state utilities commissions including those in Arizona, Minnesota, Kansas, Kentucky, the District of Columbia, Connecticut, California, Delaware, Maine, Massachusetts, New Hampshire, Vermont, New Mexico, Wisconsin and Washington State, the Office of Telecommunications Policy (Executive Office of the President), the National Telecommunications and Information Administration, the Federal Communications Commission, the Canadian Radio-television and Telecommunications Commission, the United Kingdom Office of Telecommunications, and the Secretaria de Comunicaciones y Transportes of the Republic of Mexico. He has also served as an advisor on telecommunications regulatory matters to the International Communications Association and the Ad Hoc Telecommunications Users Committee, as well as to a number of major corporate telecommunications users, information services providers, paging and cellular carriers, and specialized access services carriers.

Dr. Selwyn has presented testimony as an invited witness before the U.S. House of Representatives Subcommittee on Telecommunications, Consumer Protection and Finance and before the U.S. Senate Judiciary Committee, on subjects dealing with restructuring and deregulation of portions of the telecommunications industry.

In 1970, he was awarded a Post-Doctoral Research Grant in Public Utility Economics under a program sponsored by the American Telephone and Telegraph Company, to conduct research on the economic effects of telephone rate structures upon the computer time sharing industry. This work was conducted at Harvard University's Program on Technology and Society, where he was appointed as a Research Associate. Dr. Selwyn was also a member of the faculty at the College of Business Administration at Boston University from 1968 until 1973, where he taught courses in economics, finance and management information systems.



Dr. Selwyn has published numerous papers and articles in professional and trade journals on the subject of telecommunications service regulation, cost methodology, rate design and pricing policy. These have included:

"Taxes, Corporate Financial Policy and Return to Investors"  
*National Tax Journal*, Vol. XX, No.4, December 1967.

"Pricing Telephone Terminal Equipment Under Competition"  
*Public Utilities Fortnightly*, December 8, 1977.

"Deregulation, Competition, and Regulatory Responsibility in the Telecommunications Industry"  
*Presented at the 1979 Rate Symposium on Problems of Regulated Industries - Sponsored by: The American University, Foster Associates, Inc., Missouri Public Service Commission, University of Missouri-Columbia, Kansas City, MO, February 11 - 14, 1979.*

"Sifting Out the Economic Costs of Terminal Equipment Services"  
*Telephone Engineer and Management*, October 15, 1979.

"Usage-Sensitive Pricing" (with G. F. Borton)  
(a three part series)  
*Telephony*, January 7, 28, February 11, 1980.

"Perspectives on Usage-Sensitive Pricing"  
*Public Utilities Fortnightly*, May 7, 1981.

"Diversification, Deregulation, and Increased Uncertainty in the Public Utility Industries"  
*Comments Presented at the Thirteenth Annual Conference of the Institute of Public Utilities*, Williamsburg, VA - December 14 - 16, 1981.

"Local Telephone Pricing: Is There a Better Way?; The Costs of LMS Exceed its Benefits: a Report on Recent U.S. Experience."  
*Proceedings of a conference held at Montreal, Quebec - Sponsored by Canadian Radio-Television and Telecommunications Commission and The Centre for the Study of Regulated Industries, McGill University, May 2 - 4, 1984.*

"Long-Run Regulation of AT&T: A Key Element of A Competitive Telecommunications Policy"  
*Telematics*, August 1984.

"Is Equal Access an Adequate Justification for Removing Restrictions on BOC Diversification?"

*Presented at the Institute of Public Utilities Eighteenth Annual Conference, Williamsburg, VA - December 8 - 10, 1986.*

"Market Power and Competition Under an Equal Access Environment"

*Presented at the Sixteenth Annual Conference, "Impact of Deregulation and Market Forces on Public Utilities: The Future Role of Regulation"*

*Institute of Public Utilities, Michigan State University, Williamsburg, VA - December 3 - 5, 1987.*

"Contestable Markets: Theory vs. Fact"

*Presented at the Conference on Current Issues in Telephone Regulations: Dominance and Cost Allocation in Interexchange Markets - Center for Legal and Regulatory Studies Department of Management Science and Information Systems - Graduate School of Business, University of Texas at Austin, October 5, 1987.*

"The Sources and Exercise of Market Power in the Market for Interexchange Telecommunications Services"

*Presented at the Nineteenth Annual Conference - "Alternatives to Traditional Regulation: Options for Reform" - Institute of Public Utilities, Michigan State University, Williamsburg, VA, December, 1987.*

"Assessing Market Power and Competition in The Telecommunications Industry: Toward an Empirical Foundation for Regulatory Reform"

*Federal Communications Law Journal, Vol. 40 Num. 2, April 1988.*

"A Perspective on Price Caps as a Substitute for Traditional Revenue Requirements Regulation"

*Presented at the Twentieth Annual Conference - "New Regulatory Concepts, Issues and Controversies" - Institute of Public Utilities, Michigan State University, Williamsburg, VA, December, 1988.*

"The Sustainability of Competition in Light of New Technologies" (with D. N. Townsend and P. D. Kravtin)

*Presented at the Twentieth Annual Conference - Institute of Public Utilities Michigan State University, Williamsburg, VA, December, 1988.*

"Adapting Telecom Regulation to Industry Change: Promoting Development Without Compromising Ratepayer Protection" (with S. C. Lundquist)

*IEEE Communications Magazine, January, 1989.*

"The Role of Cost Based Pricing of Telecommunications Services in the Age of Technology and Competition"

*Presented at National Regulatory Research Institute Conference, Seattle, July 20, 1990.*

"A Public Good/Private Good Framework for Identifying POTS Objectives for the Public Switched Network" (with Patricia D. Kravtin and Paul S. Keller)  
Columbus, Ohio: *National Regulatory Research Institute*, September 1991.

"Telecommunications Regulation and Infrastructure Development: Alternative Models for the Public/Private Partnership"  
*Prepared for the Economic Symposium of the International Telecommunications Union Europe Telecom '92 Conference, Budapest, Hungary, October 15, 1992.*

"Efficient Infrastructure Development and the Local Telephone Company's Role in Competitive Industry Environment" *Presented at the Twenty-Fourth Annual Conference, Institute of Public Utilities, Graduate School of Business, Michigan State University, "Shifting Boundaries between Regulation and Competition in Telecommunications and Energy", Williamsburg, VA, December 1992.*

"Measurement of Telecommunications Productivity: Methods, Applications and Limitations" (with Françoise M. Clottes)  
*Presented at Organisation for Economic Cooperation and Development, Working Party on Telecommunication and Information Services Policies, '93 Conference "Defining Performance Indicators for Competitive Telecommunications Markets", Paris, France, February 8-9, 1993.*

"Telecommunications Investment and Economic Development: Achieving efficiency and balance among competing public policy and stakeholder interests"  
*Presented at the 105th Annual Convention and Regulatory Symposium, National Association of Regulatory Utility Commissioners, New York, November 18, 1993.*

"The Potential for Competition in the Market for Local Telephone Services" (with David N. Townsend and Paul S. Keller)  
*Presented at the Organization for Economic Cooperation and Development Workshop on Telecommunication Infrastructure Competition, December 6-7, 1993.*

"Market Failure in Open Telecommunications Networks: Defining the new natural monopoly," *Utilities Policy*, Vol. 4, No. 1, January 1994.

"*The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers*," (with Susan M. Gately, et al) a report prepared by ETI and Hatfield Associates, Inc. for AT&T, MCI and CompTel, February 1994.

*"Commercially Feasible Resale of Local Telecommunications Services: An Essential Step in the Transition to Effective Local Competition,"* (Susan M. Gately, et al) a report prepared by ETI for AT&T, July 1995.

"Efficient Public Investment in Telecommunications Infrastructure"  
*Land Economics*, Vol 71, No.3, August 1995.

"Market Failure in Open Telecommunications Networks: Defining the new natural monopoly," in *Networks, Infrastructure, and the New Task for Regulation*, by Werner Sichel and Donal L. Alexander, eds., University of Michigan Press, 1996.

Dr. Selwyn has been an invited speaker at numerous seminars and conferences on telecommunications regulation and policy, including meetings and workshops sponsored by the National Telecommunications and Information Administration, the National Association of Regulatory Utility Commissioners, the U.S. General Services Administration, the Institute of Public Utilities at Michigan State University, the National Regulatory Research Institute at Ohio State University, the Harvard University Program on Information Resources Policy, the Columbia University Institute for Tele-Information, the International Communications Association, the Telecommunications Association, the Western Conference of Public Service Commissioners, at the New England, Mid-America, Southern and Western regional PUC/PSC conferences, as well as at numerous conferences and workshops sponsored by individual regulatory agencies.